

Biofeedback for Pelvic Floor Muscle Re-education



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Objectives

- Describe the role of bio-feedback in strengthening the pelvic floor muscles in pelvic floor rehab



Overview

- Pelvic Floor Rehabilitation includes treatment for men and women with incontinence and/ or pain in the pelvic region. This includes abdominals, buttocks, pelvic floor, tailbone, vagina, rectum, penis, or testicles.
- The pelvic floor are skeletal muscles that may become weak, tight or spastic as a result of disuse, surgery, or trauma.
- Physical Therapists are specially trained to rehabilitate the pelvic floor muscles and work with patients to develop an individualized plan of care.



Who is Pelvic Floor Rehabilitation for?

- People with incontinence of urine or stool with:
 - Coughing
 - Sneezing
 - exercising
- Women with:
 - Increased tension in pelvic floor muscles
 - Vaginal pain with intercourse, tampon use or tight clothing
- Men with:
 - Chronic genital or groin pain
 - Frequent urination
 - Burning with urination (diagnosed or chronic prostatitis)



Requirements for Pelvic Floor Rehabilitation

- Intact nervous system
- Intact urinary system
- Cognitive abilities to recognize the need to pass urine
- Identify proper places to urinate
- physical skills to get there and undress
- Motivation/ compliance



What does Pelvic Floor Rehabilitation Involve? *(Evaluation & Non-surgical Treatment)*

- Flexibility and strength assessment
- Pelvic floor muscle surface EMG (or biofeedback)
- Manual muscle testing (internal or external)
- Postural exercises
- Internal/ and external massage
- Myofascial release
- Relaxation techniques and diaphragmatic breathing
- Development of an individualized home exercise program

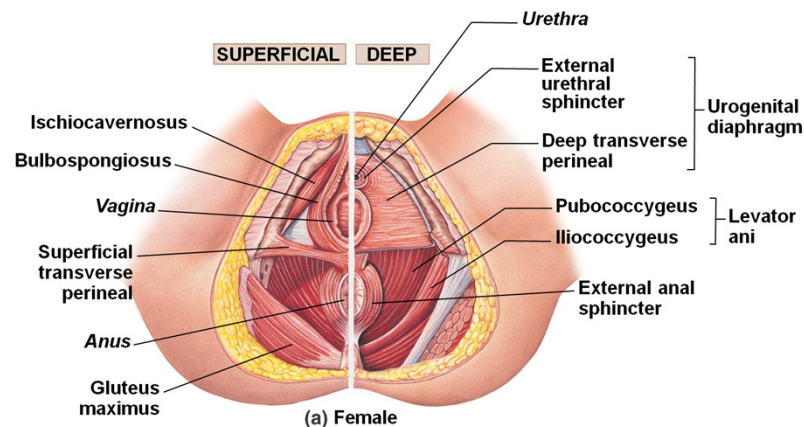


Urogenital Triangle

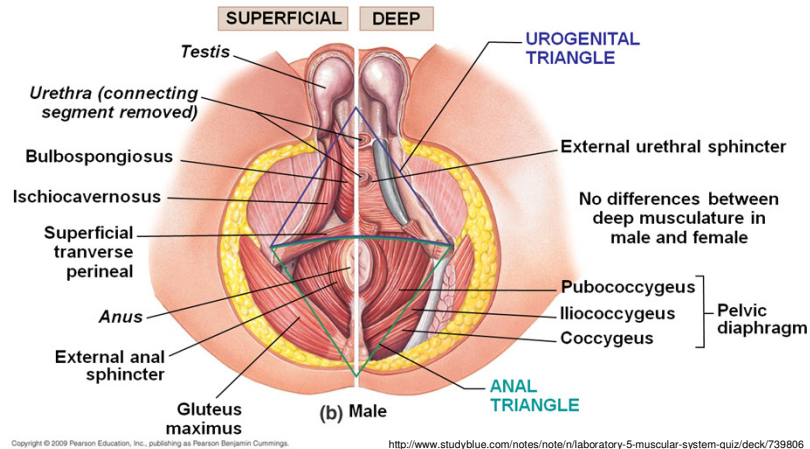
- Bony Boundary
 - Pubic symphysis
 - Pubic rami
 - Ischial tuberosities
 - Superficial transverse perineal muscles
- Urogenital Triangle Muscles
 - Superficial Muscle Layer
 - Deep Muscle Layer



Urogenital Triangle



Urogenital Triangle

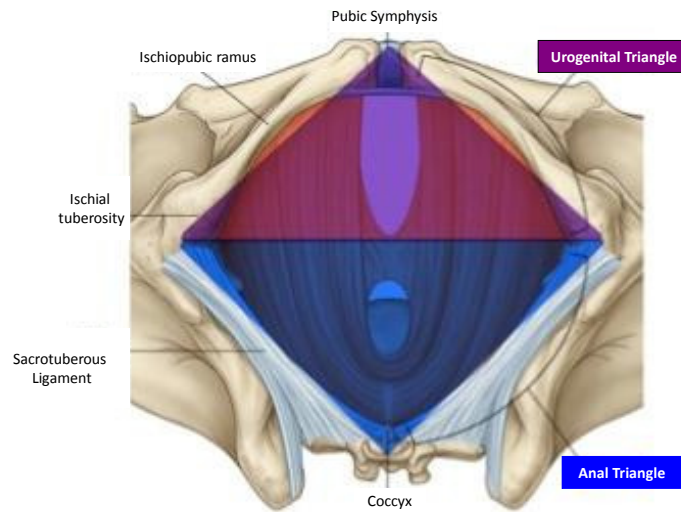


Anal Triangle

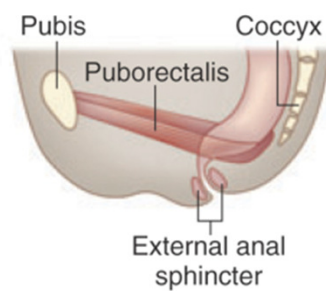
- Bony Boundary
 - Coccyx
 - Sacrotuberous Ligament
 - Gluteus Maximus
 - Superficial transverse perineal muscles
- Anal Triangle
 - External anal sphincter
 - Internal anal sphincter



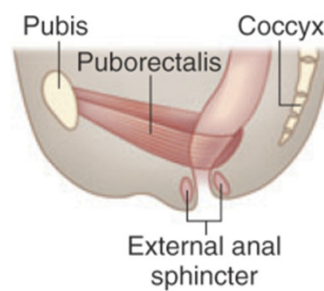
Urogenital Triangle



Normal Continence



Continence requires:
 Contraction of puborectalis
 Maintenance of anorectal angle
 Normal rectal sensation
 Contraction of sphincter



Defecation requires:
 Relaxation of puborectalis
 Straightening of anorectal angle
 Relaxation of sphincter

<http://www.cixip.com/index.php/page/content/id/478>

Biofeedback

- The process of gaining greater awareness of many physiological functions by primarily using instruments that provide information on the activity of those same systems with a goal of being able to manipulate them at will ⁽¹⁾
- Biofeedback only affects existing responses



Biofeedback

- Biofeedback may be used to improve health, performance, and the physiological changes which often occur in conjunction with changes to thoughts, emotions, and behavior. Eventually, these changes may be maintained without the use of extra equipment ⁽²⁾



Biofeedback

- Research has shown that biofeedback can improve the efficacy of pelvic floor muscle (PFM) exercises and help restore proper bladder functions ⁽¹³⁾
 - The literature presents evidence for the efficacy and effectiveness of pelvic floor muscle training performed together with adjunctive therapies (biofeedback, vaginal cones, electrical stimulation) as being greater than pelvic floor exercises performed alone (or using behavioral therapy alone) ^{(3) (4) (5) (12)}



Biofeedback

- Contradicting this, a 2013 randomized controlled trial found no benefit of adding biofeedback to PFM exercise in stress urinary incontinence ⁽¹¹⁾
- Another randomized controlled study in 2011 found no benefit from the addition of biofeedback and electrical stimulation in decreasing incontinence episodes following radical prostatectomy over behavioral therapy alone ⁽¹⁵⁾



Biofeedback

- The rationale for teaching PFM exercises with biofeedback include ⁽⁶⁾:
 - Weak muscles give off limited proprioceptive sensations needed to gauge the effectiveness of the contraction
 - When PFM's are weak, there is a strong tendency to substitute abdominal and gluteal contractions which gives faulty feedback for the desired contraction
 - When PFM exercises are performed inaccurately, there is no change in muscle function which reduces motivation
 - Effective training improves the PFM coordination needed to counteract sudden increases in abdominal pressure



Biofeedback

- Types of biofeedback
 - Electromyograph (EMG)
 - Surface EMG (SEMG)
 - Perineometer
 - Vaginal Weights/ Cones



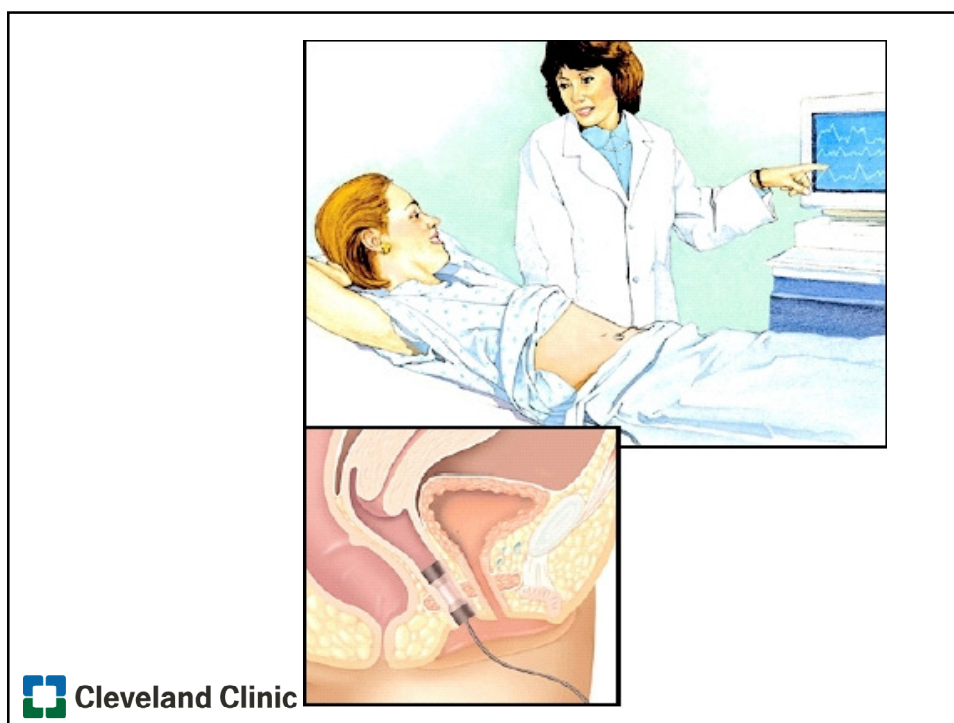
EMG/ SEMG

- An electromyograph (EMG) uses surface electrodes to detect muscle action potentials from underlying skeletal muscles that initiate muscle contraction.
- Clinicians recorded the surface electromyogram (SEMG) using one or more target muscles and a reference electrode that is placed within six inches of either active electrode. ^{(7) (8)}
 - The SEMG is measured in microvolts.



Internal Sensors

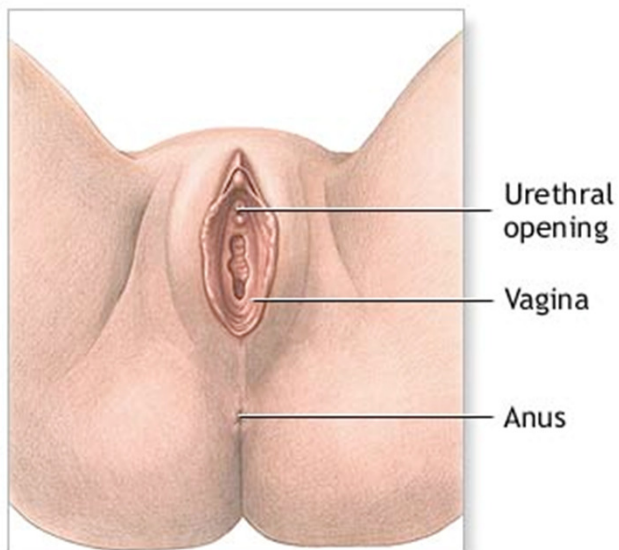




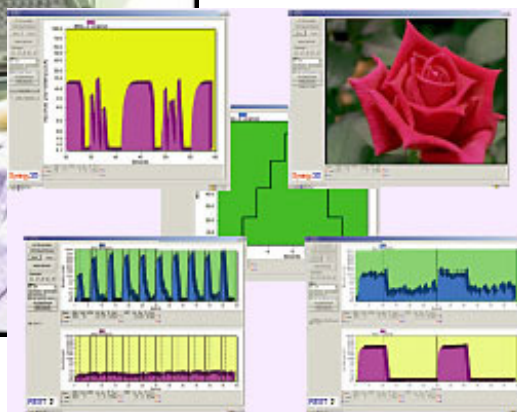
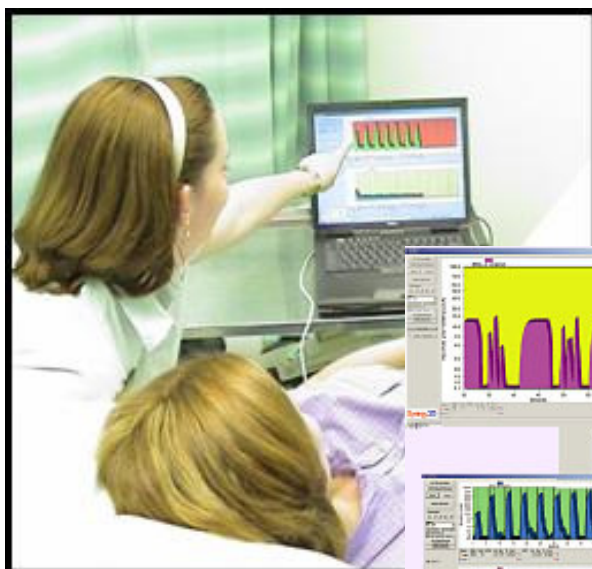
External Sensors



External Electrode Placement

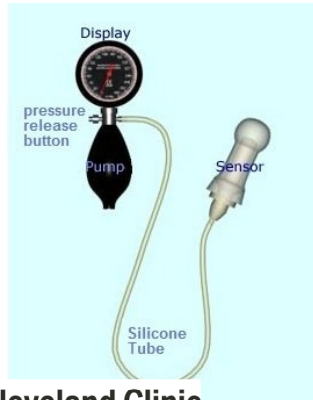


<http://health.rush.edu/healthinformation/hie%20multimedia/3/100110.aspx>



Perineometer

- The perineometer is inserted into the vagina to monitor PFM contraction and can be used to enhance the effectiveness of Kegel exercises ⁽¹⁰⁾



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www.amazon.com

Vaginal Weights/ Cones

- Studies have shown that biofeedback obtained with vaginal cones is as effective as biofeedback induced through physiotherapy electrical stimulation. ⁽¹³⁾



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Food for Thought

- Recent 2012 study examined self-efficacy in performing PFM exercises in young women age 18-30 ⁽¹⁶⁾
 - Using the Broome Pelvic Muscle Exercise Self- Efficacy Scale (PMSES) for data collection
 - Results suggest a high confidence that they are performing PFM exercises correctly
 - No actual muscle testing was performed in conjunction to measure perception along with actual ability
- Another 2013 study explored young women's perceived educational needs regarding urinary incontinence among young women aged 18-30 ⁽¹⁷⁾
 - 15% women surveyed indicated that they experience urinary incontinence
 - 31.9% of these women said they would consider seeking professional help
 - 71% women felt women were not able to talk about urinary incontinence freely
 - 51% were aware that there are professionals to help with urinary incontinence
 - Subject with incontinence were less aware of these services
 - Most women indicated they would not seek professional help for the condition



Cleveland Clinic Appointments

- [Brunswick Family Health Center](#)
 - 3574 Center Road
Brunswick, Ohio 44212
330.225.8886
- [Cleveland Clinic Main Campus](#)
 - C Building - W.O.Walker Center
10524 Euclid Ave. - Desk C22
Cleveland, OH 44195
216.445.8000
- [Hillcrest Medical Building Atrium](#)
 - 6770 Mayfield Road - Colorectal Suite #348
Mayfield Heights, OH 44124
440.312.7111



Cleveland Clinic Appointments

- [Lakewood YMCA](#)
 - 16915 Detroit Ave.
Lakewood, OH 44107
216.227.2610
- [Westlake Medical Campus](#)
 - 850 Columbia Road Suite 110
Westlake, OH 44145
440.250.5767



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